I Claim:

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1. A method of correcting for a phase offset between a subscriber and a service provider, comprising:

sending a training signal from the subscriber to the service provider, the service provider being synchronized to a network clock,

receiving the training signal at the service provider,

calculating the phase offset between the subscriber and the service provider based upon the received training signal,

transmitting the calculated phase offset from the service provider to the subscriber, and

pre-adjusting a new signal transmitted from the subscriber to the service provider based upon the transmitted phase offset.

2. The method according to claim 1, wherein the calculating step further comprises modulating the received training signal by a cosine function to generate a signal Rx and modulating the received training signal by a sine function to generate a signal Ry.

3. The method according to claim 2, wherein

R(t) = the received training signal,

ω_0 = the base frequency of the training signal, and

$Rx = \int_T R(t) * \cos(\omega_0 t) dt$, wherein $T = 2\Pi/\omega_0$.

4. The method according to claim 2, wherein

R(t) = the received training signal,

ω_0 = the base frequency of the training signal, and

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$$Ry = \int_T R(t) * \sin(\omega_0 t)dt, \qquad \text{wherein } T = 2\Pi/\omega_0 .$$

5. The method according to claim 2, further comprising the step of determining the phase offset, Δt, as a function of the arctangent (Rx/Ry).

6. The method according to claim 5, wherein

the phase offset $\Delta t = (1/\omega_0) * \text{arctangent}(Rx/Ry) + n - t_0$,

wherein t_0 = the time delay at the service provider side.

7. The method according to claim 1, wherein the step of transmitting the calculated phase offset further includes transmitting a calculated time delay at the service provider side, t_0.

8. The method according to claim 7, further including the step of pre-adjusting the new signal transmitted from the subscriber to the service provider based upon the transmitted phase offset and the transmitted time delay at the service provider side.

9. The method according to claim 1, further including the step of transmitting the pre-adjusted new signal such that the new signal is in phase with the network clock when the new signal is received at the service provider.

10. The method according to claim 1, wherein the pre-adjusting step further includes adjusting the phase of a clock signal in the subscriber by the transmitted phase offset.

11. A subscriber operably coupled via an analog subscriber loop to a service provider, the service provider being synchronized with a network clock, wherein the subscriber comprises:

a digital to analog converter for converting a digital signal into an analog signal in preparation for transmission over the analog subscriber loop,

an analog to digital converter for converting received analog signals, received from the analog subscriber loop, into a received digital signal,

a clock recovery circuit for recovering a clock signal from the received digital signal, and

a control element that generates a phase adjusted clock signal by adjusting the phase of the recovered clock signal by a phase offset, the phase offset being based upon the arctangent of a training signal modulated by the service provider,

wherein a subsequent conversion by the digital to analog converter is synchronized to the phase adjusted clock signal such that signals transmitted by the subscriber are in phase with the network clock when received at the service provider.

12. The modem in accordance with claim 11, wherein the phase offset, Δt , is determined based upon the arctangent (Rx/Ry) , wherein

$$Rx = \int_T R(t) * \cos(\omega_0 t)dt \text{, and}$$

$$Ry = \int_T R(t) * \sin(\omega_0 t)dt \text{,}$$

wherein $T = 2\Pi/\omega_0$

R(t) = a training signal sent from the subscriber to the service provider, and

ω_0 = the base frequency of the training signal.

13. A service provider for determining a phase offset between the service provider and a subscriber operably coupled to the service provider, the service provider comprising:

a cosine modulator for modulating a training signal received from the subscriber by a cosine function to generate a signal Rx,

a sine modulator for modulating a training signal received from the subscriber by a sine function to generate a signal Ry, and

a processor for determining the phase offset based upon the arctangent (Rx/Ry).

14. The service provider according to claim 13, wherein the modulator generates the signals Rx and Ry in accordance with the following equations:

$$Rx = \int_T R(t) * \cos(\omega_0 t)dt \text{, and}$$

$$Ry = \int_T R(t) * \sin(\omega_0 t)dt \text{,}$$

wherein $T = 2\Pi/\omega_0$

$R(t)$ = a training signal sent from the subscriber to the service provider, and

ω_0 = the base frequency of the training signal.

15. The service provider according to claim 14, wherein the phase offset, Δt, is determined by the processor in accordance with the following equation:

$$\Delta t = (1/\omega_0) * \text{arctangent}(Rx/Ry) + n - t_0 \text{,}$$

wherein t_0 = the time delay at the service provider side, and

n = a constant.